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FOLEY HOAG, LLP PATENT GROUP, WORLD TRADE CENTER WEST 155 SEAPORT BLVD BOSTON, MA 02110			LEE, SHUN K	
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			2878	

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Please find below and/or attached an Office communication concerning this application or proceeding.

(18)

Office Action Summary

Application No.

09/744,148

Applicant(s)

ELSTEIN ET AL.

Examiner

Shun Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6, 8-51, 53-57 and 59 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 8-51, 53-57 and 59 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 18 January 2005 has been entered.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 18 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant has not pointed out where amended

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dependent claim 18 is supported in the application, nor does there appear to be a written description of the proposed new claim limitation that the SBUV 240-280 nm image sensor is "CMOS" in the application as filed.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1, 3, 6, 8-12, 14-18, 20, 22, 35, 38-43, 46, 47, 54-56, and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dirscherl *et al.* (US 5,001,348) in view of Norris (US 5,719,567).

In regard to claims 8, 12, 39, 41, 43, 47, and 59, Dirscherl *et al.* disclose (Figs. 7-12) an apparatus for multi-spectral imaging (*i.e.*, UV images due to transient UV emitting objects or phenomena such as a rocket and a rocket combustion plume;

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column 10, line 47 to column 11, line 66) in an environment illuminated by daytime outdoor illumination (*i.e.*, day applications; column 6, lines 50-52) comprising:

- (a) image acquiring means (12, 12a, 12b, 14), for acquiring an image of a scene, the image spanning at least a visible spectrum and a solar blind UV (SBUV 240-280 nm) spectrum (column 2, lines 17-26 and 41-49), and for simultaneously providing a first image from the scene into a SBUV imaging unit (*e.g.*, UV in 15, 16), and a second image from the scene into a visible imaging unit (*e.g.*, VIS in 15, 16);
- (b) said SBUV imaging unit (15, 16) comprising:
 - (b1) a solar blind ultraviolet optical filter (*i.e.*, selective filter layer; column 11, lines 50-52) allowing transmittance of optical radiation in a solar blind UV spectrum range (*i.e.*, solar blind UV; column 2, lines 17-26 and 41-49), and absorbing optical radiation in all other spectral regions (column 6, lines 44-50);
 - (b2) SBUV image providing means (15, 16) for receiving the optical radiation in the solar blind UV spectrum range, passed through said solar blind ultraviolet optical filter, and providing a first visible image, being solar blind UV image;
- (c) said visible imaging unit (15, 16) receiving said second image of the scene from the image acquiring means (12, 12a, 12b, 14), and providing a second visible image, representing visible background scenery of the scene; and
- (d) combining means for receiving the first visible image of the SBUV imaging unit and the second visible image from the visible imaging unit, and combining said two

images into a combined visual image (I, II, III of 13 in Fig. 12; column 11, lines 7-17).

While Dirscherl *et al.* also disclose (column 10, lines 43-56) that in a desired application, the camera system can be modified or appropriately adapted as a vision aid, the apparatus of Dirscherl *et al.* lacks an explicit description that the image acquiring means comprises a beamsplitter such as an optical lens which acquires SBUV 240-280 nm and visible light beams from the scene along a common optical axis and transmits the SBUV 240-280 nm light beams spanning the UV image towards the SBUV imaging unit and a mirror in front of a central portion of said lens, for reflecting light in the visible spectrum towards the visible imaging unit wherein the combined visual image showing the UV emittance in its exact position (*i.e.*, exactly registered at same effective magnification) within the background scenery is produced by overlaying said first visible image over said second visible image. However, vision aid applications are well known in the art. For example, Norris teaches (column 3, line 66 to column 4, line 63) a combined visual image showing the UV emittance in its exact position within the background scenery is produced by overlaying (*i.e.*, superimposing) a first visible image representing received UV radiation over a real scene visible image, in order to aid the vision of an operator (*i.e.*, a vision aid application). Further, Dirscherl *et al.* disclose (column 11, lines 1-66) the use of well known optical elements such as a mirror. It should be noted that a common optical axis by definition implies the lack of the apparent displacement or the difference in apparent direction of an object as seen from two different points not on a straight line with the object. Therefore it would have been obvious to one having

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ordinary skill in the art at the time of the invention to position a split beaming mirror in the apparatus of Dirscherl *et al.* using well known optical principles, so as to obtain first and second visible images for superimposition in order to aid the vision of an operator in a vision aid application.

In regard to claims **1**, **38**, **40**, **42**, and **46**, the method steps are implicit for the modified apparatus of Dirscherl *et al.* since the structure is the same as the applicant's apparatus of claims 8, 12, 39, 41, 43, 47, and 59 above.

In regard to claims **35** and **54-56**, Dirscherl *et al.* is applied as in claims 1, 7, 38, 40, 42, and 46 above. Dirscherl *et al.* also disclose (column 10, line 47 to column 11, line 66) that the second unit is suitable of visually displaying images in the IR spectral region.

In regard to claim **3** (which is dependent on claim 1) and claim **22** (which is dependent on claim 8), Dirscherl *et al.* also disclose (column 11, lines 1-17) transferring the combined visual image into electronic recording and/or displaying means for recording and/or displaying the combined visual image.

In regard to claim **6** which is dependent on claim 1, Dirscherl *et al.* also disclose (column 11, lines 38-66) first acquiring an image of the scene to obtain an acquired image having a spectrum spanning at least the visible spectrum range and the SBUV spectral band of the scene, and then separating the spectrum of the acquired image, wherein a UV spectrum of the acquired image in the SBUV spectral range is transferred into said first SBUV imaging unit, and the acquired image in the visible spectrum range is transferred into said second visible imaging unit.

In regard to claims **9** and **10** which are dependent on claim 8, Dirscherl *et al.* also disclose (column 11, lines 46-66) that the image acquiring means comprises two image acquiring elements, a first element (e.g., optical lenses) providing the first image of the scene into the SBUV imaging unit and a second element (e.g., optical lenses) providing the second image of the scene into the visible imaging unit.

In regard to claim **11** which is dependent on claim 8, Dirscherl *et al.* also disclose (column 11, lines 46-66) that the solar blind ultraviolet optical filter is positioned one of before, after, or incorporated within an optical lens of the SBUV imaging unit.

In regard to claim **14** which is dependent on claim 8, Dirscherl *et al.* also disclose (Figs. 1 and 7) that the SBUV imaging unit further comprises a first lens (1) receiving the radiation in the solar blind spectrum range passing through the solar blind ultraviolet optical filter, and producing the solar blind UV image of the scene, wherein the scene is suspected of containing a source of UV emittance (column 6, lines 44-59).

In regard to claim **15** which is dependent on claim 14, Dirscherl *et al.* also disclose (Figs. 1 and 7) that the SBUV image providing means further comprises a SBUV image sensor (5) located at an image plane of the first lens (1), said SBUV image sensor (5) creates a visible image of the solar blind UV image of the scene (column 5, line 60 to column 6, line 10).

In regard to claim **16** which is dependent on claim 15, Dirscherl *et al.* also disclose (Figs. 1 and 7) that the SBUV image sensor (5) contains a fluorescent screen (column 5, line 60 to column 6, line 10).

In regard to claim **17** which is dependent on claim 15, Dirscherl *et al.* also disclose (Figs. 1 and 7) that the SBUV image sensor (5) is a UV solar blind image intensifier (column 6, lines 44-59).

In regard to claim **18** which is dependent on claim 15, Dirscherl *et al.* also disclose (Figs. 1 and 7) that the SBUV image sensor (5) is selected from among a group consisting of CCD, BCCD, EBCCD, ICCD, MCP-PMT having multianode, and MCP-PMT having position sensitive anode output, for producing first electronic signals describing said UV image.

In regard to claim **20** which is dependent on claim 8, Dirscherl *et al.* also disclose (column 11, lines 1-17) that the visible imaging unit comprises an image sensor selected from among a group of sensors consisting of CCD, CMOS, and CID, receiving the visible image, and producing second electronic signals describing said image.

8. Claims 2, 13, 19, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dirscherl *et al.* (US 5,001,348) in view of Norris (US 5,719,567) as applied to claims 1, 8, and 12 above, and further in view of Filopovich (US 5,079,416).

In regard to claim **2** which is dependent on claim 1, while Dirscherl *et al.* also disclose (column 11, lines 1-66) the use of well known optical elements such as a beamsplitter, the modified apparatus of Dirscherl *et al.* lacks an explicit description that the combining of said first and second images is carried out by optical combining means, allowing viewing of the combined visual image. However, optical elements such as beam combiners or splitters (e.g., dichroic beamsplitters) are well known in the art. For example, Filopovich teaches (column 5, lines 3-12) that dichroic beamsplitters

combine or split beams. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a well known optical element such as a dichroic beamsplitter in the modified apparatus of Dirscherl *et al.*, in order to combine or split beams using well known optical principles so as to obtain a combined visual image (e.g., superimposed first and second visible images in a vision aid application).

In regard to claim **13** which is dependent on claim 12, while Dirscherl *et al.* also disclose (column 11, lines 1-66) the use of well known optical elements such as a beamsplitter, the modified apparatus of Dirscherl *et al.* lacks an explicit description that the beamsplitter is a dichroic beamsplitter. However, optical elements such as beam combiners or splitters (e.g., dichroic beamsplitters) are well known in the art. For example, Filopovich teaches (column 5, lines 3-12) that dichroic beamsplitters combine or split beams. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a well known optical element such as a dichroic beamsplitter in the modified apparatus of Dirscherl *et al.*, in order to combine or split beams using well known optical principles so as to obtain a combined visual image (e.g., superimposed first and second visible images in a vision aid application).

In regard to claim **19** which is dependent on claim 8, while Dirscherl *et al.* also disclose (column 11, lines 1-66) the use of well known optical elements such as a beamsplitter, the modified apparatus of Dirscherl *et al.* lacks an explicit description that the combining of the first visible image of the solar blind UV range of the scene and the second visible image is carried out by a beamsplitter simultaneously receiving said first

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and second visible images. However, optical elements such as beam combiners or splitters (e.g., dichroic beamsplitters) are well known in the art. For example, Filopovich teaches (column 5, lines 3-12) that dichroic beamsplitters combine or split beams. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a well known optical element such as a dichroic beamsplitter in the modified apparatus of Dirscherl *et al.*, in order to combine or split beams using well known optical principles so as to obtain a combined visual image (e.g., superimposed first and second visible images in a vision aid application).

In regard to claim **24** which is dependent on claim 8, Dirscherl *et al.* also disclose (column 6, lines 44-59) an UV image intensifier and (column 11, lines 1-66) the use of well known optical elements such as a beamsplitter, the modified apparatus of Dirscherl *et al.* lacks an explicit description that the visible imaging unit comprises only passive optical elements and the SBUV imaging unit comprises passive optical elements. However, passive optical elements such as beam combiners or splitters (e.g., dichroic beamsplitters) are well known in the art. For example, Filopovich teaches (column 5, lines 3-12) that dichroic beamsplitters combine or split beams. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a well known optical element such as a dichroic beamsplitter in the modified apparatus of Dirscherl *et al.*, in order to combine or split beams using well known optical principles so as to obtain a combined visual image (e.g., superimposed first and second visible images in a vision aid application).

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9. Claims 4, 21, 23, 28-34, 36, 37, 48-51, 53, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dirscherl *et al.* (US 5,001,348) in view of Norris (US 5,719,567) as applied to claims 3, 8, and 22 above, and further in view of Applicant's Admitted Prior Art.

In regard to claim **4** (which is dependent on claim 3) and claim **23** (which is dependent on claim 22), while Dirscherl *et al.* also disclose (column 11, lines 1-66) that the electronic recording and/or displaying means is a video monitor, the modified apparatus of Dirscherl *et al.* lacks that the electronic recording and/or displaying means is a videotape. However, videotapes are well known in the art. For example, applicant admits (last paragraph on pg. 34 and third paragraph on pg. 39) as Prior Art that standard video equipment such as videotapes are well known in the art. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide well known videotapes in the modified apparatus of Dirscherl *et al.*, in order to obtain a record of the combined visual image.

In regard to claim **21** which is dependent on claim 8, the modified apparatus of Dirscherl *et al.* lacks that the combined visual image is obtained by at least one of arithmetic mixing, non-arithmetic mixing, luminance keying and chroma keying, for combining first and second electronic signals representing the first and second visible images, respectively. However, a combined visual image obtained by arithmetic mixing, non-arithmetic mixing, luminance keying or chroma keying is well known in the art. For example, applicant admits (last two paragraphs on pg. 23) as Prior Art that a combined visual image obtained by arithmetic mixing, non-arithmetic mixing, luminance keying or

chroma keying is well known in the art. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide well known means of arithmetic mixing, non-arithmetic mixing, luminance keying or chroma keying in the modified apparatus of Dirscherl *et al.*, in order to obtain a combined visual image.

In regard to claims **28** and **29** which are dependent on claim 21, Dirscherl *et al.* also disclose (column 5, lines 20-27) a digital processing unit for processing at least one of the first and second electronic signals, for at least one of improving the contrast between the image of the UV emittance and the background scenery in the combined visual image, for the elimination of noise, the identification of UV emitters in the scene, and the capture of transient UV events in the scene.

In regard to claim **30** which is dependent on claim 28, the modified apparatus of Dirscherl *et al.* lacks that the processing unit is an analog processing unit. However, image processing units are well known in the art. For example, applicant admits (last two paragraphs on pg. 23) as Prior Art that analog processing units for image processing are well known in the art. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide well known image processing means (e.g., analog processing units) in the modified apparatus of Dirscherl *et al.*, in order to process a combined visual image.

In regard to claims **31-34** which are dependent on claim 28, the modified apparatus of Dirscherl *et al.* lacks means for providing an alarm or means for initiating action (e.g., initiation of fire extinguishing means or documentation of UV emitting events) as to the detection of SBUV emittance which is above a predefined threshold

level. However, means for providing an alarm or initiating action are well known in the art. For example, applicant admits (last paragraph on pg. 28) as Prior Art that means for providing an alert or initiating action are well known in the art. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide well known means providing an alarm or initiating action in the modified apparatus of Dirscherl *et al.*, in order to indicate or initiate corrective measures.

In regard to claim **36** (which is dependent on claim 1), claim **37** (which is dependent on claim 8), and claim **53** (which is dependent on claim 35), while Dirscherl *et al.* also disclose (column 10, line 47 to column 11, line 66) that the apparatus is for multi-spectral imaging, the modified apparatus of Dirscherl *et al.* lacks an explicit description that it is used for imaging UV emittance caused by electrical discharge. However, UV emitting phenomena such as caused by electrical discharges are well known in the art. For example, applicant admits (last paragraph on pg. 4) as Prior Art that it is well known in the art to obtain images of electrical discharges for the early detection of electrical leakages. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to use the modified apparatus of Dirscherl *et al.* for multi-spectral imaging of electrical discharges, in order to detect electrical leakages.

In regard to claims **48** and **50** (which are dependent on claim 1), claims **49** and **51** (which are dependent on claim 8), and claim **57** (which is dependent on claim 35), while Dirscherl *et al.* also disclose (column 10, line 47 to column 11, line 66) that the apparatus is for multi-spectral imaging, the modified apparatus of Dirscherl *et al.* lacks

an explicit description that it is used for imaging of the reflections from objects (e.g., finger prints or fluid stains) illuminated by UV light sources. However, imaging of the reflections from objects (e.g., finger prints or fluid stains) illuminated by UV light sources is well known in the art. For example, applicant admits (first paragraph on pg. 6) as Prior Art that it is well known in the art to obtain images of the reflections from objects (e.g., finger prints or fluid stains which are invisible to the naked eye) illuminated by UV light sources. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to use the modified apparatus of Dirscherl *et al.* for multi-spectral imaging of UV illuminated objects, in order to detect objects (e.g., finger prints or fluid stains) which are invisible to the naked eye.

10. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dirscherl *et al.* (US 5,001,348) in view of Norris (US 5,719,567) and Filopovich (US 5,079,416) as applied to claim 24 above, and further in view of Baril *et al.* (US 5,535,053).

In regard to claims **25** and **26** which are dependent on claim 24, while Dirscherl *et al.* also disclose (column 10, lines 43-46) that the apparatus can be adapted as a vision aid, the modified apparatus of Dirscherl *et al.* lacks that the modified apparatus in a monocular or binocular form. However, monocular or binocular vision aides are well known in the art. For example, Baril *et al.* teach (column 1, lines 16-65) that monocular or binocular vision aides are well known in the art and provide advantages for different applications. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to form the modified apparatus

of Dirscherl *et al.* either as a monocular or binocular goggle, in order to obtain a wearable monocular or binocular vision aide adapted for a desired application.

11. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dirscherl *et al.* (US 5,001,348) in view of Norris (US 5,719,567) as applied to claim 8 above, and further in view of Palmer (US 5,687,034).

In regard to claim **27** which is dependent on claim 8, the modified apparatus of Dirscherl *et al.* lacks a stills camera means for recording the combined visual image on a stills camera film. However, photographing with vision aides are well known in the art. For example, Palmer teaches (column 1, lines 13-63) that taking photographs with vision aides are well known in the art. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a camera means in the modified apparatus of Dirscherl *et al.*, in order to obtain photographs.

12. Claims 44 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dirscherl *et al.* (US 5,001,348) in view of Norris (US 5,719,567) as applied to claims 1 and 8 above, and further in view of Hartemann *et al.* (US 4,835,391).

In regard to claim **44** (which is dependent on claim 1) and claim **45** (which is dependent on claim 8), while Dirscherl *et al.* also disclose (column 10, line 47 to column 11, line 66) that the apparatus is for multi-spectral imaging, the modified apparatus of Dirscherl *et al.* lacks an explicit description that it is used for imaging Cherenkov radiation. However, UV emitting phenomena such as Cherenkov radiation are well known in the art. For example, Hartemann *et al.* teach (column 1, lines 11-59) it is well known in the art to obtain images of Cherenkov radiation for the study of beam

dynamics. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to use the modified apparatus of Dirscherl *et al.* for multi-spectral imaging of Cherenkov radiation, in order to study beam dynamics.

Response to Arguments

13. Applicant's arguments filed 18 January 2005 have been fully considered but they are not persuasive.

Applicant argues (last paragraph on pg. 11 to second paragraph on pg. 13 of remarks filed 18 January 2005) that Dirscherl *et al.* do not disclose and cannot have in his structure a multi-spectral system that includes at least a SBUV (240-280 nm) imaging unit (*i.e.*, a unit which is solar blind). Examiner respectfully disagrees. Dirscherl *et al.* state (column 2, lines 34-49) that "The recognition system according to the invention serves for identifying, tracking, calculating approach flight coordinates, and warning against certain flying bodies with an active engine, especially rockets, jets or other reaction propulsion or jet stream engines or also projectiles with, for example pyrotechnic compounds and a plume tail or fire flash, flame or similar manifestations of ignition or combustion. The warning against such an actively attacking flying body is achieved by means of a passive electro-optic imaging system having a high location and temporal resolution which recognizes the approaching flying body without errors in a special wave length range (solar blind), wherein the imaging system is coupled to an image processing system for allowing optimal countermeasures to be commenced in quasi-real time" and (column 6, lines 44-59) that "In the light optical part of the recognition system, one or more filters for the wave length specific selection of the light

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incident from the field of view are arranged in such a manner, that the UV signature of the rocket plume is optimally transmitted with a maximum filtering (absorption) of all other wave lengths of any light present. The application of filters can be carried out with a light background (day application) or even better with a relatively dark background (night application). For the night application the filtering may possibly be left out if the background noise does not come into play. A special photo-cathode, for example, made of CsI, RbTe or CsTe, can also be used which is only sensitive in the UV spectral range, or a wide band (200-1000 nm) sensitive photo-cathode, for example, bi-alkali, GaAs, all in combination with suitable filters". Thus Dirscherl *et al.* teach an apparatus comprising an imaging unit "in combination with suitable filters" for detecting images in "a special wave length range (solar blind)" with a "maximum filtering (absorption) of all other wave lengths of any light present". Therefore, Dirscherl *et al.* expressly disclose a multi-spectral system that includes at least a SBUV (240-280 nm) imaging unit.

In response to applicant's argument (last paragraph on pg. 13 of remarks filed 18 January 2005) that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (*i.e.*, two separate imaging units) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Moreover even considering applicant's argument, Dirscherl *et al.* clearly teach multiple sensors which detect in different spectral ranges (see for example, image generator 15 and image generator 16 in Fig. 11).

Applicant argues (first two paragraphs on pg. 14 of remarks filed 18 January 2005) that Dirscherl *et al.* teach away from the present invention by displaying the UV, the IR, and the visible images separately on a display. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, Dirscherl *et al.* state (column 10, lines 43-56) that "In a desired application, the camera system can be modified or appropriately adapted as a vision aid and in nighttime applications as an intelligent residual light camera". Norris teaches (column 3, line 66 to column 4, line 63) a combined visual image showing the UV emittance in its exact position within the background scenery is produced by overlaying (*i.e.*, superimposing) a first visible image representing received UV radiation over a real scene visible image, in order to aid the vision of an operator (*i.e.*, a vision aid application). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to superimpose the first and second visible images in the apparatus of Dirscherl *et al.* in a vision aid application, in order to aid the vision of an operator.

Applicant argues (third paragraph on pg. 14 to last paragraph on pg. 16 of remarks filed 18 January 2005) that Norris does not teach the combination of a visual image showing the UV emittance in its exact position within the background scenery. In response to applicant's argument, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary

reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Norris teaches (column 3, line 66 to column 4, line 63) a combined visual image showing the UV emittance in its exact position within the background scenery is produced by overlaying (*i.e.*, superimposing) a first visible image representing received UV radiation over a real scene visible image, in order to aid the vision of an operator (*i.e.*, a vision aid application). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to superimpose the first and second visible images in the apparatus of Dirscherl *et al.* in a vision aid application, in order to aid the vision of an operator.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (571) 272-2439. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2878

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SL

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